only by prolonged monocular occlusion can an accurate diagnosis of the extraocular muscle balance be made.

1904 Franklin Street.

TABLE OF CASES

	Heterophoria Exo.	Eso.	Hyper.	Remarks
4483			1	Headaches present as long as can remember stopped from date of patching. Prisms gave desired relief.
4821	4		2	Prisms gave relief.
5195		1	3	"No trouble now in using eyes."
5319	4		3	"Entire relief from headaches." Prisms.
5440	1		3	"Cannot get along without prisms."
6155	3		3	"Sews constantly and no trouble." Prisms.
7221	5		6	Optional shortening of sup. rect. gave entire relief.
7398	7		3	Patch relieved symptoms of 15 years' standing; prisms also, but she preferred operation, which also gave relief. No return of symptoms three years later. She had had an appendectomy in hopes of relief from severe headaches.
7428	3		2	"No troubles." Prisms.
7495	6		2	"Can read and sew without headaches." Prisms.
7804	8		3	"No more headaches." Prisms.
4401	3		1	This patient could converge only to 16 inches, but refused operation for that insufficiency.
238F	6		5	"Better with prism correction."
716F	11		5	Optional shortening of sup. rect. gave entire relief except for reading. Prisms 3 in. gave relief for near.
8838	7		5	Optional shortening of sup. rect. gave entire relief.
8658	9		6	Shortening of sup. rect. and partial tenotomies of both externi gave complete relief from headaches.
8654	3		2	Prisms gave relief.
7797	8		2	Partial relief by prisms. Operation refused.
7804	8		3	Headaches and near disability relieved by prisms.
7843	3		1	Prisms gave entire relief even from scintillating scotoma.
9560	3		3	Prisms gave relief.
9292	3		3	Prisms gave relief.
3306	9		3	Prisms gave relief. No more nausea after near use. Auto trips now possible for the first time in comfort.
9728	6		3	Vert. prisms gave very definite relief.

By optional operation is meant one done at patient's request with the idea of doing away with the need for any glasses. None were done unless prism correction had given relief from symptoms.

TREATMENT OF FRACTURES*

THE USE OF UNNA'S ZINC OXID GELATIN MIXTURE

By LEO ELOESSER, M.D.
AND
W. L. ROGERS, M.D.
San Francisco

DISCUSSION *by Maynard C. Harding, M.D., San Diego; Ralph Soto-Hall, M.D., San Francisco; H. W. Chappel, M.D., Los Angeles.*

THE adhesive mixtures generally used in applying traction for the treatment of fractures have various disadvantages. Ordinary adhesive plaster, consisting of a rubber base with zinc oxid, irritates the skin and makes a water-tight dressing. Acne pustules and blisters make it necessary to change such a dressing after five, six, or seven days. The older yellow adhesive (Maw's English adhesive plaster on moleskin) is better, but not quite so soft and pliable. A crease in the plaster makes a break in the underlying skin. It shares with rubber adhesive a tendency to slip with weights exceeding ten to twelve pounds, and when plaster slips, it invariably pulls the skin with it and makes further traction impossible. It does not keep well; old plaster is hard and brittle and does not adhere. Pure white Venice turpentine (which is not turpentine, but a solution of resins) and absolute alcohol, equal parts, painted on the skin makes an excellent adhesive mixture which gave great satisfaction abroad. It held well, so well that the cloth held by it to the skin would tear before the turpentine mixture gave; it was cheap, easily applied, and did not irritate. But it has not been possible to get the pure white Venice turpentine here; the yellow proved so irritating and made so many blisters that we had to abandon it.

Sinclair's glue and the acetone-celloidin mixture both get very hard and are likely to make pressure sores. Of the substances listed, English adhesive on moleskin for longitudinal strips, with the ordinary zinc oxid adhesive on muslin for transverse strips, seemed the most satisfactory.

UNNA'S ZINC-GELATIN

For several years we have given up adhesive plaster for traction and have substituted Unna's zinc-gelatin and stockinette.

For use in fractures an adhesive substance should meet two requirements: it should not irritate the skin and it should stick—stick for several weeks without having to be changed and without leaving a bed of pimples and pressure sores behind. Unna's zinc-gelatin does this.

The formulas vary. A very satisfactory formula is: Zinc oxid and gelatin aa 75.0 (one part of each by weight); water and glycerin aa 150.0 (two parts of each by weight).

The gelatin should be allowed to soak in the cold water several hours before heating; the mixture is then warmed over a water bath until the gelatin is melted, the zinc oxid is stirred in, and finally the glycerin added. The quantity given above is sufficient for one dressing; it is well, however, to make up several pounds at one time. Addition of 5 to 10 cubic centimeters of 5 per cent carbolic acid will prevent mold if the mixture is to be kept. It should be dispensed in a tin container, not in a glass or porcelain jar which will crack when the mixture is heated later. It should have a rubbery consistency after it cools and be smooth and free from lumps of undissolved gelatin. Any druggist can put it up.

OTHER ESSENTIALS FOR TRACTION

The other essentials for traction are: several yards of narrow stockinette, two or two and one-half inches wide; several yards of Canton flannel bandage two and one-half or three inches wide; a wooden board which is a little longer than the distance between the two bony prominences over which pressure may come (usually the two malleoli) and with a hole bored through its middle; some cord; carpet tacks; a hammer; and the necessary weights, pulleys, and splints.

*Read before the Industrial Medicine and Surgery Section of the California Medical Association at the Fifty-Eighth Annual Session, May 6-9, 1929.

PROCEDURE IN APPLICATION

These having been procured, the tin with the quantity of zinc-gelatin given above is set in a pan of water and heated. The limb is usually shaved, although this is not imperative, and a single layer of stockinette is pulled over it, smoothly, as one would a stocking. The melted zinc-gelatin is then worked into the stockinette with the hand. The hand works the warm mixture well into the meshes of the cloth, for it is adhesion between this lower layer of stockinette and the skin that counts; adhesion of the upper layers matters little. The gelatin should be applied as hot as the hand will bear. It is thin and workable when hot; as it cools it gets sticky and does not penetrate the meshes of the stockinette. The hand safeguards the patient against being scalded with too hot a mixture. A foot or so of the stockinette is left projecting below the sole of the foot and the rest is doubled back over the first layer. It is unnecessary to work further zinc-gelatin into the top layer of stockinette. It will stick by itself. A handful of absorbent cotton is dabbed onto the dressing to prevent its sticking to the bedclothes and the whole is powdered with talcum. The stockinette is slit over the back of the foot and the heel as far as the ankle, and the two lateral flaps thus formed are tacked to the spreader board. If the stockinette is narrow enough it will fit perfectly smooth without a crease or a fold; if it creases or folds, it is too wide and will not adhere.

An additional layer of zinc-gelatin and an additional wrapping with strips of Canton flannel placed transversely around the leg will add further support if much weight is to be used. The strips should be applied like shingles on a roof, beginning at the ankle, each turn being cut instead of reversed, as in applying an ordinary roller bandage.

COMMENT

This Unna's gelatin dressing has been very useful. It may remain in place indefinitely—six to eight to ten weeks. It is left this length of time in old people with fractured femoral necks; the skin remains beautifully smooth and white under it.

If stockinette is not to be had, two longitudinal strips of firm unsized muslin may be used; these are covered with transverse strips of Canton flannel as described above.

If much weight is to be used a firmer material, muslin, or drill may be sewn as a reinforcement to the stockinette from the ankle down and around the spreader board.

It is scarcely necessary to recall the usefulness of this dressing in leg ulcers, varicose veins, and the chronic edema of limbs recently removed from splints and plaster of Paris dressings. This bandage is habitually put on patients with fractured legs before letting them out of bed, or immediately after removing plaster of Paris splints. But one layer of stockinette should be used and this always crossed with a transverse layer of Canton flannel or wide-meshed crinoline if the bandage is to prevent edema. Stockinette alone will not do; the strain is transverse and not longitudinal, as with fracture appliances. The dressing is applied in the morning, before the leg is swollen; to apply it after the leg is edematous is useless. One dressing will last for six to eight weeks. It is cleaner, cheaper, and more comfortable than a rubber stocking, but it must not be wet. The patient must keep his leg out of the water when he bathes. Hot water will immediately melt the dressing; the easiest way to remove it is to put the patient into a warm tub.

490 Post Street.

DISCUSSION

MAYNARD C. HARDING, M.D. (700 Electric Building, San Diego).—The dressing here described is one of the best. I do not believe, however, that it is really superior to Shiver's moleskin plaster. Orthopedic surgeons are used to leaving this plaster on as long as five months at a time, and have found it does not irritate. The newer rubber moleskin plasters are no better than ordinary adhesive, in my experience.

RALPH SOTO-HALL, M.D. (350 Post Street, San Francisco).—I have had a limited experience with this method of traction, but have found that great importance should be given to the snugness with which the stockinette is applied. This stockinette should be very narrow or proper adhesion to the skin will not take place. Certainly adherence to every detail of the technique is necessary for success.

H. W. CHAPPEL, M.D. (1136 West Sixth Street, Los Angeles).—Unna's gelatin dressing for traction, especially in fracture cases, has distinct advantages over other kinds of traction. The even pull on all of the skin under the dressing, the length of time the dressing can be used without changing, the excellent condition of the skin when the dressing is removed, and the ability to apply traction immediately, warrant a thorough trial of Doctor Eloesser and Doctor Rogers' method.

DOCTOR ELOESSER (closing).—Since writing the above paper we note that Böhler of Vienna uses a zinc-gelatin traction dressing in fractures of the femur as an adjunct to skeletal traction by means of a Steinmann nail driven through the tibial tuberosity. (Technik der Knochenbruchbehandlung, Vienna, 1929.)

GOITER OPERATIONS IN MENTAL DISEASES*

By GEORGE H. SANDERSON, M. D.
AND
MARGARET SMYTH, M. D.
Stockton

DISCUSSION *by Thomas G. Inman, M.D., San Francisco; Clarence G. Toland, M.D., Los Angeles.*

THE idea that there might be a connection between disturbances of the thyroid gland and mental disease is not a new one. Parry,[1] in his classical description of exophthalmic goiter in 1786, mentions that it may be associated with mental phenomena. Graves[2] in 1835 noted the frequency of severe hysteria in this condition. Alex Robertson[3] in 1874 held the view that Graves' disease was due to an inflammation of the cervical sympathetic, and that the accompanying exophthalmos and insanity were due to hyperemia in the affected organs from this cause, just as was goiter in the thyroid. In 1877 Leonard

* Read before the General Surgery Section of the California Medical Association at the Fifty-Eighth Annual Session, May 6-9, 1929.